

The source-sink relationship and principles for pollution prevention and control of typical multi-metal mining sites and surrounding soils

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The heavy metals pollution caused by long-term multi-metal mining activities within Southwestern China threatens the health of environment and human, therefore, it increasingly became an urgent environmental issue to prevent and control such typical pollutants. But due to its variably geochemical backgrounds and complex physic-chemical and biological driving processes interplay and overlap at landscapes in Southwestern China, until to present, the relationship of source-sink, the processes mobilization/immobilization and transformation, the dominant mechanism and the controlling factors that influence the heavy metals mobilization/immobilization and transformation in these area were not been well clarified; additionally, the existed technology for pollution prevention and control typical multi-metal mining sites and surrounding soils is insufficient.

Thus, based on the geochemical characteristics at landscapes, four typical research sites, karst mountains, longitudinal gorges, karst hills and alpine valleys were selected and microscopic analyses, stable isotopes and chemical speciation, as well as statistics were planned for this on-going project. The objectives of this project are: 1) to model and predict the acidification of mining waste and heavy metals release, mobilization/immobilization and transformation, 2) to uncover the physic-chemical and biological driving mechanisms, 3) to determine the dominant factors to controlling above mentioned processes and mechanisms, 4) to reveal the composite pollution profiles and to provide theoretical support for the technology development to preventing and controlling pollutants at multi-metal mining sites and surrounding soils.